L 22502-66 EPF(n)-2/EWG(m)/EWP(t) IJP(c) JD/WW/JG

ACC NR: AP6011479 SOURCE CODE: PO/0046/65/010/09-/0637/0637

AUTHOR: Taube, Mieczyslaw; Wierusz, Andrzej; Kowalew, Andrzej; Mielcarski, Mieczyslaw

ORG: Institute of Nuclear Research, Warsaw

TITLE: Concept of a fast breeder reactor with fused salt fuel and boiling mercury 'WARS'

SOURCE: Nukleonika, v. 10, no. 9-10, 1965, 637

TOPIC TAGS: fast reactor, breeder reactor, plutonium compound, uranium compound, liquid metal cooled reactor, mercury

ABSTRACT: The fast breeder concept using a fused fuel of $^{239}PuCl_3$, $^{238}UCl_3$, NaCl, and KCl in boiling Hg coolant is described. [Orig. art. in Eng.] [NA]

SUB CODE: 18 / SUBM DATE: 08Dec65 / ORIG REF: 002 / OTH REF: 001

Card 1/1

L 21920-66 EPF(n)-2/EWG(m)/EWP(t) IJP(c) WW/JD/JG

ACC NR: AP6014480 SOURCE CODE: PO/0046/65/010/09-/0639/0640

AUTHOR: Taube, Mieczyslaw; Mielcarski, Mieczyslaw; Kowalew, Andrzej; Poturaj-Gutniak, Stefan

ORG: Transuranium Elements Laboratory, Institute of Nuclear Research, Warsaw-Zerau

TITLE: Concept of salt-boiling fast breeder reactor 'SAWA'

SOURCE: Nukleonika, v. 10, no. 9-10, 1965, 639-640

TOPIC TAGS: fast reactor, breeder reactor, plutonium compound, uranium compound

ABSTRACT: A fast breeder reactor concept is proposed in which the core consists of the following fused chlorides: $^{239}PuCl_3$ as the fissionable material, $^{238}UCl_3$ as the fertile material, NaCl as the inactive diluent, and $AlCl_3$ as the coolant. [Orig. art. in Eng.] [NA]

SUB CODE: 18 / SUBM DATE: 08Dec65 / ORIG REF: 003 / OTH REF: 004

Card 1/1 nst

KOWALEWICZ, A.

TECHNOLOGY

Periodicals : TECHNIKA LOTNICZA. Vol. 13, no. 4, July/Aug. 1958

KOWALEWICZ, A. Gas flow with the detonating combustion. p. 9

Monthly List of East European Accessions (EEAI) LC, Vol. 8, No. 2, February 1959, Unclass.

P/008/60/000/003/001/003
A107/A026

AUTHORS: Chomiak, Jerzy; Kowalewicz, Andrzej; - Masters of Engineering

TITLE: Application of Hydraulic Analogy in Quantitative Investigation of Gas Dynamics

PERIODICAL: Technika Lotnicza, 1960, No. 3, pp. 66 - 77

TEXT: The authors describe various methods of applying the hydraulic analogy. After an explanation of symbols used, investigations based on adequate equations of the following problems are described: data obtained by the hydraulic analogy on single and double-dimension flows, based on isentropic gases and hydraulic gases; the influence of the adhesion of liquids on results obtained by the hydraulic analogy method; the dissipation of energy caused by the adhesion; influence of the vertical speed acceleration on the surface stress of hydraulic analogy; hydraulic shock waves and the analogy of the gas flow; basic elements and sizes of water channels and measurements of shallow water in channels. Laboratory tests on water channel models by visual methods are briefly described. There are 20 figures and 39 references: 26 English, 4 Soviet, 4 Polish, 3 German and 2 French.

Card 1/1

24643
P/008/60/000/005/001/003
A107/A126

26.211

AUTHOR: Kowalewicz, Andrzej, Master of Engineering

TITLE: Operation of inlet diffusers under various conditions - Part I

PERIODICAL: Technika Lotnicza, no. 5, 1960, 135 - 140

TEXT: This is the first part of an article dealing with the important effect of inlet diffusers in connection with the speed increase of supersonic jets; this effect is not limited only to the air flow of the jet engine. The author explains and derives equations for the functions facilitating the effect of diffusors on the air flow; for the relation between Mach Number, critical Mach and the indefinite exit rate; for diffusors without nose cone in case of normal shock wave, at subsonic and supersonic speed; for diffusors with nose cones at Mach, critical, and super-critical Mach conditions. The article will be continued. There are 11 figures.

ASSOCIATION: Instytut Lotnictwa (Aeronautical Institute)

Card 1/1

27101
P/008/60/000/006/001/004
D219/D305

26.2110

AUTHOR: Kowalewicz, Andrzej, Master of Engineering

TITLE: Inlet diffusers operation in variable conditions, Part II

PERIODICAL: Technika lotnicza, no. 6, 1960, 165-169

TEXT: The author discusses non-stable cases of the flow through diffusers. Two kinds of oscillatory flows through a diffuser are distinguished, one of high frequency and small amplitude and one of comparatively low frequency and large amplitude. The first one does not affect the work of a through flow engine, the second called "buzz" is dangerous because it produces periodic changes of thrust of the engine and may cause its extinction. The following discussions refer to steady, supersonic flows through diffusers with conical central bodies, for which the varying conditions are obtained by throttling the flow at the outlet. High frequency oscillations are predominant at the throttled position, "buzz" occurs when

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Inlet diffusers operation...

throttling is reduced. Pressure oscillograms by Dailey obtained from a diffusor are shown. High frequency oscillations are briefly analyzed. They are of the order of 400-900 Hz. High frequencies (~1400 Hz) were also observed to occur concurrently with low frequencies (order 120-160 Hz). Their occurrence is ascribed to the vorticity of flow caused by the intake of the diffuser. Analysis of "buzz" follows. Its cycle is described. Shock wave at the inlet moves upstream at fairly rapid rate. This causes a fall in diffuser flow output and induces high frequency oscillations and fall in pressure behind the wave. After reaching its external position, it starts moving back at a slower rate than upstream. High frequency oscillations die out and pressure and flow output increase. The flow now has a quasi-stable character. The new cycle of "buzz" is started by the destroyed mass flow equilibrium. The variation of frequency of oscillations for constant Mach numbers w.r.t. throttling conditions is shown as well as the intensity of oscillations w.r.t. throttling conditions. The author proceeds to explain causes and the theory of "buzz" by reference to Western

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Inlet diffusers operation...

authors. The effect of burning fuel at the outlet of the diffuser is to facilitate the occurrence of "buzz". In turn, "buzz" in that part of the cycle when the pressure in the diffuser falls, has a tendency to extinguish the flame. A method of stabilizing the inlet shock wave is to introduce a ring at the inlet - the graph of the pressure recovery coefficient for a diffuser with and without the ring is shown in Fig. 18 - or to regulate the cross-sectional areas of the diffuser. Finally the author describes the characteristics of a diffuser as a part of a flow through the engines and illustrates it graphically. There are 9 figures and 15 non-Soviet-bloc references. The 4 most recent references to English-language publications read as follows: R. Herman: Supersonic Inlet Diffusers and Introduction to Internal Aerodynamics, Honeywell, 1956; R.R. Jamison: Ram Jets, Journal of the Royal Aeron. Soc. June 1957; Probert: Ram Jets, Journal of the Royal Aeron. Soc. March 1958; D. Wyatt: A Review of Supersonic Air Intake Problems, Air Intake Problems in Supersonic Propulsion, Pergamon Press, 1958.

29279 P/032/61/008/003/002/004
D265/D301

11.7300

AUTHOR: Kowalewicz, Andrzej (Warsaw)

TITLE: Analysis of non-linear pressure oscillations appearing during combustion

PERIODICAL: Archiwum budowy maszyn, v. 8, no. 3, 1961, 263 - 271

TEXT: This article is a continuation of the author's previous analysis (Ref. 10: Stability Problem of the Flow with Combustion in Variable-area duct. IARS, April 1961). Longitudinal oscillations are considered only. The flow is defined by the equation of continuity

$$\frac{1}{\partial t}(\rho f) + \frac{\partial}{\partial x}(\rho u f) = 0, \qquad (1)$$

the equation of motion

$$\rho \frac{du}{dt} + \frac{\partial P}{\partial x} - \frac{\partial}{\partial x}\left(\mu'' \frac{\partial u}{\partial x}\right) = 0 \qquad (2)$$

and the energy

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S/124/62/000/005/021/048
D251/D308

AUTHOR: Kowalewicz, Andrzej

TITLE: Graphical method of computing a ramjet engine

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 5, 1962, 47, abstract, 5B286 (Prace Inst. lotn. 1960, no. 11, 3-19)

TEXT: A graphical method is proposed of computing the parameters of a ramjet engine and its high velocity characteristics in the range M = 0.5 - 4.0. The method is based on the use of the experimental characteristics of ramjet engine elements. The method proposed is illustrated by an example. [Abstractor's note: Complete translation].

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Analysis of non-linear pressure ...

$$\rho T \frac{ds}{dt} - \frac{\partial}{\partial x}\left(\lambda \frac{\partial T}{\partial x}\right) - \mu''\left(\frac{\partial u}{\partial x}\right)^2 - \rho Q \frac{d\omega}{dt} = 0. \qquad (3)$$

u - velocity, P - pressure, ρ - density, s - entropy, T - absolute temperature, Q - quantity of heat evolved during combustion of unit mass of mixture, ω - exhaust gas content in the toal mass of gas undergoing combustion, $\mu'' = (3/4\ \mu + 1/3)(2\mu + 3\eta)$ - coefficient of dynamics viscosity as given by W. Hayes (μ and η - first and second coefficients of viscosity), λ - coefficient of heat conductivity. Assumptions made are: Velocity of combustion $d\omega/dt = \varphi(\omega, P,$ element of fluid), one-dimensional flow of compressible heat conducting gas, constant coefficient of viscosity μ", entropy increase due to viscosity and conductivity negligible as compared with entropy increase due to combustion. By Euler's and Lagrange's transformations of Eqs. 1, 2, 3, the author derives the final general formula for the analyzed process of combustion -

$$\omega^2 \frac{\partial^2 P}{\partial t^2} - kP^{1+1/k} Af^2 \frac{\partial^2 P}{\partial \psi^2} = \left(kP \frac{\partial \varphi}{\partial P} - 2\varphi\right) \frac{\partial P}{\partial t} + \qquad (17\ a)$$

$$+ \frac{k+1}{k} \frac{\omega}{P} \left(\frac{\partial P}{\partial t}\right)^2 + kP\varphi \frac{\partial \varphi}{\partial \omega} + 2kAP^{1+1/k} f \frac{\partial f}{\partial \psi} \frac{\partial P}{\partial \psi} +$$

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$$+\mu''kA^2\frac{P^{1+2/k}}{\omega}f\left\{2f\frac{\partial f}{\partial\psi}\frac{\partial u}{\partial\psi}\left(\frac{1}{kP}\frac{\partial P}{\partial\psi}-\frac{1}{\omega}\frac{\partial\omega}{\partial\psi}\right)+\right.$$
$$+\frac{\partial u}{\partial\psi}\left[f^2\frac{1-k}{k}\frac{1}{P^2}\left(\frac{\partial P}{\partial\psi}\right)^2-\frac{f^2}{kP}\frac{\partial^2 P}{\partial\psi^2}+2\left(\frac{f}{\omega}\right)^2\left(\frac{\partial\omega}{\partial\psi}\right)^2+\right. \qquad (17\text{ a})$$
$$\left.+f\frac{\partial^2 f}{\partial\psi^2}-\frac{f^2}{\omega}\frac{\partial^2\omega}{\partial\psi^2}-2\frac{f^2}{\omega}\frac{1}{P}\frac{\partial\omega}{\partial\psi}\frac{\partial P}{\partial\psi}\right]+$$
$$\left.-f\frac{\partial^2 u}{\partial\psi^2}\left(\frac{2f}{kP}\frac{\partial P}{\partial\psi}+2\frac{\partial f}{\partial\psi}-\frac{f}{\omega}\frac{\partial\omega}{\partial\psi}\right)+f^2\frac{\partial^3 u}{\partial\psi^3}\right\}.$$

The constituent terms of simplified form of this equation for the non-viscous flow ($\mu'' = 0$) -

$$\omega^2\left(\frac{\partial^2 P}{\partial t^2}\right)-kP^{1+1/k}Af^2\frac{\partial^2 P}{\partial\psi^2}=\left(kP\frac{\partial\varphi}{\partial P}-2\varphi\right)\frac{\partial P}{\partial t}+\frac{k+1}{k}\frac{\omega}{P}\left(\frac{\partial P}{\partial t}\right)^2- \qquad (17\text{ b})$$
$$kP\varphi\frac{\partial\varphi}{\partial\omega}+2kAP^{1+1/k}f\frac{\partial f}{\partial\psi}\frac{\partial P}{\partial\psi};\ \ldots\ (17\text{b}).$$

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are discussed in detail and interpreted as induced or damped pressure oscillations of high and low frequencies, appearing during combustion, and the mutual interaction between the combustion process and pressure oscillation. The main conclusion drawn from Eq. (17 b) is the inevitable appearance of pressure oscillations during the combustion process. Finally the evaluation of the order of magnitude of each term of Eq. (17 b) is effected. There are 12 references: 1 Soviet-bloc and 11 non-Soviet-bloc. The references to the 4 most recent English-language publications read as follows: G. Rosen: Exact solutions for the one-dimensional viscous flow of a perfect gas: The physics of fluids, March-April 1960; L. Crocco, I. Gray and D.T. Harrie, Theory of liquid propellant rocket combustion instability and its experimental verification; JARS, February 1960; G. Rosen, Non-linear pressure oscillations in a combustion field JARS April 1960; A. Kowalewicz, Stability problem of the flow with combustion in variable-area duct, JARS April 1961.

SUBMITTED: January 1961

Card 4/4

KOWALEWICZ, Andrzej, mgr inz.

Approximate analysis of the flow stability through a normal shock diffuser. Inst lotn prace no.20:38-47 '63.

ACCESSION NR: AP4034602 P/0036/64/000/008/0249/0249

AUTHOR: Kowalewicz, Andrzej (Doctor, Engineer)

TITLE: Analysis of stability of flow through a diffuser with perpendicular shock wave

SOURCE: Przeglad mechaniczny, no. 8, 1964, 249

TOPIC TAGS: shock wave diffuser, aircraft engine diffuser, flow, flow stability, gas flow, inviscid gas flow, aerodynamics, ramjet, ramjet diffuser, aircraft engine

ABSTRACT: A theoretical method for computing the resonance frequencies and damping coefficient was developed, and an analysis of the flow stability through a diffuser was carried out. A perturbation method with consideration of contraction of the flow before the diffuser's intake section, widening of the diffuser throat, and Mach number for unperturbed flow was also developed. Study was based on a one-dimensional model of non-heat-conducting inviscid gas. Study confirmed that flow is stable within the examined range of Mach numbers from 1 to 2.5, as well as for arbitrary flow contraction at diffuser intake and arbitrary widening of the diffuser throat. Experimental verification of the premises was carried out by comparing experimental and theoretical results. The theoretical conclusions were confirmed by

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ACCESSION NR: AP4034602

tests in a supersonic wind tunnel. Results were in qualitative and quantitative sense and encompassed a wide range of throat openings. Additional information concerning the flow rates close to zero was also obtained. Complementary tests carried out in a water conduit indicated that pulsations during the flow of "shallow water" through the diffuser have an analogous character. The study has an important technical aspect in that it permits a proper selection of the conditions for cooperation of the diffuser with the ramjet combustion chamber. Orig. art. has: no graphics.

ASSOCIATION: Politechnika Warszawska Katedra Aerodynamiki (Warsaw Polytechnic, Department of Aerodynamics)

SUBMITTED: 11Dec63 DATE ACQ: 11May64 ENCL: 00

SUB CODE: ME, PR NO REF SOV: 000 OTHER: 000

Card 2/2

L 26139-65 EWT(l)/EWT(m)/EWA(c)/FCS(k)/EWA(l) Pd-1
ACCESSION NR: AP5002534 P/0033/64/016/005/1153/1180

AUTHOR: Kowalewicz, A. (Warsaw)

TITLE: Stability analysis of a normal shock diffusor

SOURCE: Archiwum mechaniki stosowanej, v. 16, no. 5, 1964, 1153-1180

TOPIC TAGS: diffusor, supersonic flow, shock wave, Mach number, natural frequency, damping coefficient, mass flow ratio

ABSTRACT: To determine the stability of subcritical and critical

ABSTRACT: To determine the stability of subcritical and critical flow through a normal-shock inlet diffusor in unperturbed parallel supersonic flow, the author develops a theoretical method for calculating the natural frequencies and the damping coefficient, using a one-dimensional model of nonstationary flow of a nonviscous heat-conducting gas, as well as the method of perturbation with allowance for the contraction of the stream before the inlet section of

L 26359-65
ACCESSION NR: AP5002534

the diffusor, the divergence of the diffusor, and the mach number of the unperturbed stream. It is assumed that the perturbations are functions of the position and are harmonic functions of the time. The author has previously presented (Prace Instytutu Lotnictwa, no. 21, 1963, 38-46) a detailed survey of papers dealing

L 26359-65
ACCESSION NR: AP5002634

scheme of diffusor flow. 3.2. Fundamental set of differential equations. 3.3. Approximate solution of fundamental set of equations. 3.3. A method for flow stability testing. 3.4. Boundary conditions.

3.3. A method for flow stability testing. 3.4. Boundary conditions. 3.5. Characteristic equation. 3.6. Special cases of flow. Critical flow through a diffusor with constant cross section. 3.7. Summary of results and conclusions. 4. Experimental stability analysis. 4.1. Purpose and subject of the experiments. 4.2. Test bed and measurement method. 4.3. Accuracy of frequency measurement. 4.4. Water channel tests. 4.5. Discussion of results and conclusions. 5. Concluding remarks. Appendix. Orig. art. has: 60 formulas, 12 figures, and 2 tables.

ASSOCIATION: Institute of Aeronautics

SUBMITTED: 03Feb64 ENCL: 00 SUB CODE: ME

NR REF SOV: 002 OTHER: 030

Card 3/3

KOWALEWICZ, Andrzej (Warsaw)

The flow through a transsonic diffuser with central spear. Archiw bud maszyn 12 no.1:141-147 '65.

1. Submitted February 1964.

L 09027-67 EWP(m) WW

ACC NR: AT6033639 SOURCE CODE: PO/2532/66/000/026/0062/0067

AUTHOR: Kowalewicz, Andrzej -- Kovalevich, A. (Doctor of engineering)

ORG: Institute of Aviation, Warsaw (Instytut Lotnictwa) 35

TITLE: Analysis of the applicability of Ranque tubes for gas cooling

SOURCE: Warsaw. Instytut Lotnictwa. Prace, no. 26, 1966, 62-67

TOPIC TAGS: vortex tube, heat exchanger, Ranque tube, gas cooling, vortex tube gas cooling/Ranque effect

ABSTRACT: The performance characteristics of a vortex tube with or without initial heat exchanger were analyzed theoretically. General relationships for the temperatures of gas after cooling, and the temperatures of characteristic sections of a system composed of an initial heat exchanger and a vortex tube were given. True cooling performance of the tube was compared with that of a throttling valve, or a turbine compressor. The paper contains also a survey of industrial uses of the vortex tube, and publications concerning the Ranque effect. Studies at the Institute of Aviation at the present time, as requested by the Union of the Petroleum Industry concern use of vortex tubes in natural gas cooling for separation of

Card 1/2 UDC: 536.24:621.56

L 09027-67

ACC NR: AT6033639 O

water and heavy hydrocarbons. Ranque tubes are used in the SSSR industrially during natural gas processing. The paper was approved by Jan Traczyk, Doctor of Engineering. Orig. art. has: 8 figures, 1 table, and 10 formulas. [Based on author's abstract]

SUB CODE: 13, 20/ SUBM DATE: 00Jun65/ SOV REF: 014/ OTH REF: 007/

Card 2/2 nst

KOWALEWSKA, A.

Effect of additional oxygen on the antibacterial action of heteronitrogen of quinophenols. Acta poloniae pharm. 9 no.3:197-212 1952. (CLML 23:2)

1. Of the Institute of Pharmaceutical Chemistry (Head--Prof. Boguslaw Bobranski, M.D.) of Wroclaw Medical Academy.

SURNAME, Given Names KOWALEWSKA, D.

5

Country: Poland

Academic Degrees: [not given]

Affiliation: [Presumed] Ludwik Hirszfeld Institute of Immunology and Experimental Therapy (Instytut Immunologii i Terapii Doswiadczalnej im. Ludwika Hirszfelda), Polish Academy of Sciences (PAN--Polska Akademia Nauk), Wroclaw; Director: Prof. Stefan SLOPEK, Dr.

Source: Warsaw, Postepy Higieny i Medycyny Doswiadczalnej, Vol XV, No 4, 1961, pp 442-444.

Data: "Electron-Microscopy of Fibroblasts in Continuous Cultures." English abstract of paper reported at the I Conference on Pathological Anatomy, Poznan, 1960.

Authors:
KOWARZYKOWA, Z.
GRONIOWSKI, J.
DJACZENKO, W.
KOWALEWSKA, D.

GPO 981643

KOWARZYKOWA, Zofia; ZARZYCKI, Jan; KOWALEWSKA, Danuta; CZECHOWICZ, Kazimierz; PERYT, Alina

Attempted application of cytochemical reactions in cultivated heart fragments. Postepy hig. med. dosw. 16 no.1:135-138 '62.

1. Z Pracowni Hodowli Tkanek Instytutu Immunologii i Terapii Doswiadczalnej PAN im. L. Hirszfelda we Wroclawiu Kierownik: prof. dr Z.Kowarzykowa.
(HEART anat & histol) (TISSUE CULTURE)

KOWALEWSKA, Danuta

Observations on explanted chrysoid hepatoma. Postepy hig.med. dosw. 17 no.6:709-717 N-D'63.

1. Z Zakladu Patofizjologii Instytutu Immunologii i Terapii Doswiadczalnej PAN im. L.Hirszfelda we Wroclawiu; kierownik: prof.dr. H.Kowarzyk.

KOWARZYKOWA, Zofia; ZARZYCKI, Jan; KARPIAK, Stanislaw E.; KOWALEWSKA, Danuta; KOCHMAN, Marian; PERYT, Alina; CZECHOWICZ, Kazimierz

The metabolic gradient in the development of embryonic chick heart. Acta med.Pol. 4 no.4:351-360 '63.

1. Institute of Immunology and Experimental Therapy, Polish Academy of Sciences, Wroclaw. Director: S. Slopek.

KOWALEWSKA, D.

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POLAND

KOWARZYKOWA, Zofia, ZABRZYCKI, Jan, KARPIAK, Stanisław F., KOWALEWSKA, Danuta, PERYT, Alina, and CZECHOWICZ, Kazimiera; Institute of Immunology and Experimental Therapy (Instytut Immunologii i Terapii Doswiadczalnej) im. L. Hirszfelda, PAN [Polska Akademia Nauk, Polish Academy of Sciences], Wrocław

"Metabolic Gradient in the Embryo Heart."

Warsaw, Postepy Higieny i Medycyny Doswiadczalnej, Vol 17, No 1-2, 63, pp 207-208.

Abstract: Preliminary report. Comparative studies of the PAS reaction in auricular and ventricular tissues of the chick embryo heart in vitro led to differential studies of the carbohydrate metabolism in pulps and extracts of these tissues. Biochemical determinations revealed a metabolic gradient, not previously noted to the knowledge of the authors. The five (5) references contain three (3) English and two (2) Polish sources.

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POLAND

KOWALEWSKA, Danuta, Tissue Culture Laboratory (Pracownia Hodowli Tkanek), Department of Pathological Physiology (Zaklad Patofizjologii), Institute of Immunology and Experimental Therapy (Instytut Immunologii i Terapii Doswiadczalnej) im. L. Hirszfelda of PAN [Polska Akademia Nauk, Polish Academy of Sciences] in Wroclaw

"Influence of pH of Medium on Multiplication and Ultrastructure of He-La Cells in Vitro."

Warsaw, Postepy Higieny i Medycyny Doswiadczalnej, Vol 17, No 1-2, 63, pp 209-221.

Abstract: Author reports results of study showing that the optimum pH for He-La cell growth is 7.5--7.1. First period (2 days) of growth is not much affected by variation in pH, but second (after 4 days) is greatly hampered by alkalinity. Effect of initial pH is evident in ultrastructure of the cells, which appear fragmented with fission of nucle- and cytoplasm when grown with initial high alkalinity, and the presence of channels in the cell nucleus when grown under conditions of initial acidity. One Polish and 5 West refs.

1/1

KOWARZYKOWA, Zofia; ZARZYCKI, Jan; KARPIAK, Stanisław E. KOWALEWSKA, Danuta; KOCHMAN, Marian; PERYT, Alina; CZECHOWICZ, Kazimierz.

The metabolic gradient of the development of the embryonic chick heart. Postępy hig.med.dośw. 17 no.6:689-698 N-D'63.

1. Z Instytutu Immunologii i Terapii Doświadczalnej PAN im. L.Hirszfelda we Wrocławiu.

ACCESSION NR: AP4042749 P/0014/64/043/007/0373/0374

AUTHOR: Wolski, Wlodzimierz; Kowalewska, Jadwiga

TITLE: Barium ferrite with V_2O_5 and Nb_2O_5 admixtures

SOURCE: Przemysl chemiczny, v. 43, no. 7, 1964, 373-374

TOPIC TAGS: vanadium pentoxide, niobium pentoxide, permanent magnet, barium ferrite, coercive force, remanence

ABSTRACT: This is a preliminary report on the effect of V_2O_5, Nb_2O_5, and Ta_2O_5 on ferrites of $BaO.6Fe_2O_3$ composition. The magnetic measurements were made by Dr. A Wrzeciono by means of the Weiss-Ferrer method on apparatus built at the Zaklad Ferromagnetykow Instytutu Fizyki PAN, Poznan (Ferromagnetics Department of the Physics Institute PAN). The results show that the magnetic parameters of the ferrites are affected by both the type and the amount of admixture. In the case of V_2O_5 and Nb_2O_5 the effect varies with the sintering temperature. At 1200 and 1230 C a content of 0.5% V_2O_5 (by weight) only slightly affects the coercive force. At 1260 C a V_2O_5 content up to 1.5% does not change the coercivity, whereas $\approx$ 0.5% Nb_2O_5 substantially increases the

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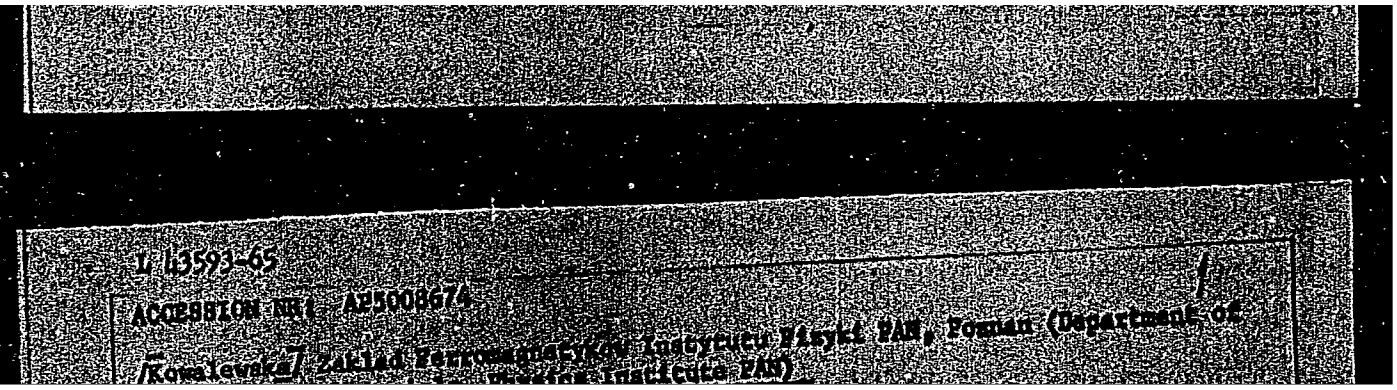

KOWALEWSKA, Maria

Case of congenital extensive skin loss in newborn infant.
Pediat. polska 32 no.1:67-70 Jan 57.

1. Z Oddzialu Kliniki Chirurgii Dziecicej A.M. w Warszawie Kierownik Kliniki: prof. dr. med. J. Kosakowski Kierownik Oddzialu: dr. med. T. Hroboni. Adres: Warszawa, ul. Grzybowska 73/37.
(EPIDERMOLYSIS BULLOSA, case reports (Pol))

NOWALEWSKA, Maria

[illegible]servations on early surgical treatment of periappendicular infiltrations in children. Pol. tyg. lek. 20 no.18:646-648 3 My '65.

1. Z Kliniki Chirurgii Dziecięcej AM w Warszawie (Kierownik: prof. dr. med. J. Kossakowski; Kierownik Oddziału przy ul. Działdowskiej 1: doc. dr. med. T. Hrehoni).

TULCZYNSKA, Helena; SLOMOWNA-WALEJKO, Barbara; KOWALEWSKA, Maria

Left-sided subphrenic abscess. Case report. Polski tygod.lek. 15 no.32:1241-1244 8 Ag '60.

1. Z Kliniki Diagnostyki Chorob Dzieciecych A.M. w Warszawie, kierownik: prof. dr med. Z.Lejmbach, z Zakladu Radiologii Pediatrycznej, kierownik: prof. dr med. K.Rowinski i z Kliniki Chirurgii Dziecicej A.M. w Warszawie, keirownik; prof. dr med. J.Kossakowski; Oddzial, ul. Dzialdowska 1; kierownik Oddzialu: dr med. T.Hroboni.
(SUBPHRENIC ABSCESS case reports)

KOWALEWSKA, Maria; SIGMOWNA-MALEJKO, Barbara

A case of Ellis-Van Creveld syndrome (chondro-ectodermal dysplasia). Pol. przegl. radiol. 28 no.2:109-117 Mr-Ap '64.

1. Z Kliniki Chirurgii Dziecięcej Akademii Medycznej w Warszawie (Kierownik: prof. dr. med. J. Kossakowski, Oddział, ul. Działdowska 1, Kierownik Oddziału: dr. med. T. [illegible] i z Zakładu Radiologii Pediatrycznej Akademii Medycznej w Warszawie (Kierownik: prof. dr. med. K. Rowiński)

KOWALEWSKA, Salomea

"The sociology of an industrial enterprise" by Aleksander Matejko. Reviewed by Salomea Kowalewska. Praca zabezp spol 3 no.10:89-91 '61.

KOWALEWSKI, A.

Is the division of the bituminous layers into macadams and concrete right?

P. 48. (BUDOWNICTWO PRZEMYSLOWE) (Warszawa, Poland) Vol. 13, no. 1, Jan. 1958

SO: Monthly Index of East European Accession (EEAI) LC Vol. 7, No. 5, 1958

KOWALEWSKI, Antoni

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Behavior of the L3wyS relay during a two-phase short circuit after a transformer connected group Yd11. Przegl elektrotech 39 no.5:183-187 My '63.

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leukergy in congestive heart failure)
(CONGESTIVE HEART FAILURE, blood in,
leukergy)

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(LIVER, diseases
diag.,test for leukergy)
(BILIARY TRACT, diseases
diag.,test for leukergy)
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leukergy in dis.of liver & biliary tract, diag.value)

KOWALEWSKI, Jan

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intestines & lungs (Pol))
(LUNG DISEASES, case reports,
strongyloidiasis, with inintestinal invasion (Pol))
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Polski tygod.lek. 15 no.45:1730-1732 7 N '60.

1. Z II Kliniki Chorob Wewnetrznych A.M. w Lublinie; kierownik:
prof.dr med. A.R.Tuszkiewicz.
(CORTICOTROPIN ther)
(ADRENAL CORTEX HORMONES ther)

KOWALEWSKI, Jan; ZATONSKA, Izabela

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1. Z II Klin. Chor. Wewn. A.M. w Lublinie Kierownik: prof. dr med. A.R. Tuszkiewicz.

(CORTICOTROPIN toxicol) (ADRENAL CORTEX HORMONES toxicol)

POLAND

KOWALEWSKI, Jan and Jerzy SZYDLOWSKI; Second Clinic of Internal Diseases (II Klinika Chorob Wewnetrznych) AM /Akademia Medyczna -- Medical School/ in Lublin, Director: Prof Dr Med A. R. TUSZKIEWICZ and the Institute of Radiology (Zaklad Radiologii) of the AM in Lublin, Director: Prof Dr Med K. SKORZYNSKI.

"A Case of Medullary Leukemia with Skin and Extensive Bone Alterations"

Krakow, Przeglad Lekarski, Vol 18, No 12, 62, pp 474-478.

Abstract: /Authors' English summary modified/ Case report of medullary leukemia, which at first was clinically and hematologically chronic, having then passed quickly into an acute form. Interesting in this case were the formation of leukemic infiltrations in the skin and extensive changes in the bone system, which had the character of a multifocal atrophy of bone tissue. These bone alterations which appear

POLAND

Krakow, Przeglad Lekarski, Vol 18, No 12, 62, pp 474-478 (continued).

very rarely in medullary leukemias in adults, were the cause of disturbances in calcium phosphate metabolism together with the formation of calcium metastases in kidneys. The treatment, at first with Myleran, and afterwards during the exacerbation of the disease, with Prednisolon and Purinethol did not influence in any way the course of the disease and did not contribute to the prolongation of the patient's life.

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2542, 2372
CSO: 2000-N

KOWALEWSKI, Jan; TOMASZEWSKI, Jeremiasz; SZYSZKO, Bozena

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KOWALEWSKI, Jan; TOMASZEWSKI, Jeremiasz

Haptoglobin in myocardial infarction. Pol. arch. med. wewnet. 35 no.7:975-979 '65.

1. Z II Kliniki Chorob Wewnetrznych AM (Kierownik: prof. dr. med. A.R. Tuszkiewicz) i z Centralnego Laboratorium PSK nr. 1 w Lublinie (Kierownik: doc. dr. med. T. Borkowski).

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Ampicillin -- a wide-spectrum penicillin in the treatment of urinary tract infection. Pol. tyg. lek. 20 no.40:1504-1506 4 O '65.

1. Z II Kliniki Chorob Wewnetrznych AM w Lublinie (Kierownik: prof. dr. med. A.R. Tuszkiewicz) i z Zakladu Mikrobiologii AM w Lublinie (Kierownik: prof. dr. J. Parnas).

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"Nomogram for determining the height of tachymetric pickets". p. 372, (PRZEGLAD GEODEZJNY Vol. 10, No. 12, Dec. 1954. Warszawa, Poland)

SO: Monthly List of EastEuropean Accessions. (EEAL). LC. Vol. 4, No. 4. April 1955, Uncl.

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Some new improvements in the field of nomography. p. 17, (PRZEGLAD GEODEZYJNY, Vol. 11, No. 1, January 1955, Warszawa, Poland)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 5 May 1955, Uncl.

KOWALEWSKI, K.

KOWALEWSKI, K., Exhibition of rationalizer's ideas in surveying. p 202.

Vol. 11, no. 6, June 1955, Warszawa, Poland. SCIENCE

SO: Monthly List of East European Accessions (EEAL), LC, Vol. 5, No. 2 Feb. 1956

KOWALEWSKI, K.

A technical conference in Katowice. p. 388.
(PRZEGLAD GEODEZYJNY. Vol. 12, no. 10, Oct. 1956, Poland)

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SO: Monthly Index of East European Accession (EEAI) LC Vol. 7, No. 5, 1958

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P. 123 (PRZEGLAD GEODEZYJNY) Poland, Vol. 13, No. 3, Mar. 1957

SO: Monthly Index of European Accessions (AEEI) Vol. 6, No. 11, November 1957

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GEOGRAPHY & GEOLOGY

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KOWALEWSKI, K. Stratigraphy of the Miocene in southern Poland with special consideration of the southern borders of the Gory Swietokrzyskie. p.3.

Monthly List of East European Accessions (EEAI), LC, Vol. 8, No. 5, May 1959, Unclass.

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1. Zaklad Stratygrafii, Instytut Geologiczny, Warszawa.

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Ways of improving the economics of construction enterprises.
Przegl budowl i bud mieszk 36 no. 4:212-215 Ap '64.

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AKUSTYKA. (Uniwersytet im. Adama Mickiewicza w Poznanfu) Poznan. (Papers on acoustics issued by Adam Mickiewicz University in Poznan; with English summaries.)

Krutkov's theory of the tensor of the stress function. p. 61.

No. 1, 1957

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Unclass.

24(2),24(3)

AUTHOR: Kowalewski, Leon

P/045/60/019/01/004/008
B018/B000

TITLE: The Theory of Magnetic Anisotropy of Ferromagnetic Crystals

PERIODICAL: Acta Physica Polonica, 1960, Vol 19, Nr 1, pp 59-84 (Poland)

ABSTRACT: The author calculates the anisotropic portion of the free energy of ferromagnetic hexagonal and cubic crystals; since all external tensions and spontaneous magnetostriction are neglected, this anisotropic portion is determined by the crystallographical symmetry of the lattice; here it is termed magnetocrystalline anisotropic energy. An exact calculation of this quantity may be performed by the methods worked out by Bogoliubov and Tiablikov, Holstein and Primakoff. Vonsovski et al. pointed out that magnetic energy consists of a quasiclassical and an exchange part. In this paper, however, quasiclassical multipole interactions (long-range interactions) are neglected since they do not play an important part in the problem of magnetic anisotropy. For his calculations the author takes into account only the dipole-dipole and quadrupole-quadrupole magnetic exchange coupling. First, the Hamiltonian is written down. A calculation of its eigenvalues follows. Then, the energy levels at $0^{\circ}K$ are determined for crystals with cubic (simple, body-centered and face-centered) lattice as well as with simple and closely packed hexagonal

Card 1/3

The Theory of Magnetic Anisotropy of Ferromagnetic Crystals

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lattice. It is assumed that the crystal in its lowest energy state is magnetized to saturation. In the case of cubic crystals the direction of easy magnetization depends on the sign of the quadrupole interaction coefficient Q. If in the case of simple hexagonal crystals only the six nearest neighbors in the base plane are taken into account, the direction of easiest magnetization is perpendicular to the c-axis, and a consideration of the two neighbors on the c-axis above and below the base plane causes a rise in the minimum crystal energy for the direction of easy magnetization. In a closely packed hexagonal lattice, however, the direction of easiest magnetization leans over toward the hexagonal axis when all the twelve nearest neighbors are taken into account. Spin, influence of more distant neighbors and hexapole interactions determine whether the direction of easiest magnetization lies along the c-axis or deviates from it. The influence of a magnetic field upon the direction of spontaneous magnetization at $0^{\circ}K$ is discussed, and the dispersion formulas are calculated in consideration of the nearest neighbors only. A formula for the free energy is derived and then employed in calculating the free energy of a simple cubic lattice as an example. In conclusion, the author thanks Professor Dr. S. Szczeniowski for his advice, discussion, and supervision of this work. There are 2 figures, 6 tables, and 19 references, 9(8) of which are Soviet.

Card 2/3

The Theory of Magnetic Anisotropy of Ferromagnetic Crystals

P/045/60/019/01/004/006
B018/B000

ASSOCIATION: Department of Theoretical Physics, Adam Mickiewicz University, Poznań

SUBMITTED: June 1, 1959

Card 3/3

KOWALEWSKI, Leon

On the quantum theory of antiferromagnetics. Acta physica Pol 20 no.7:545-551 '61

1. Institut für Theoretische Physik, Adam Mickiewicz Universität, Poznan.

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P/045/61/020/008/002/004
B109/B202

AUTHOR: Kowalewski, Leon

TITLE: Dispersion formula in ferrites with spinel structures

PERIODICAL: Acta Physica Polonica, v. 20, no. 8, 1961, 675-678

TEXT: The author discusses errors in the papers of Kaplan, T. A. (Ref. 1: Phys. Rev., 109, 782 (1958)) and Vonsovskiy, S. V., Sedov, Y. M., (Ref. 3: Izv. Akad. Nauk. SSSR, Ser. fiz., 18, 319 (1954)). In an earlier paper (Kowalewski, L., Acta phys. Polon., 20, (1961)) the author pointed to errors in Ref. 3; T. A. Kaplan (Ref. 1) suspects that the linear dispersion law in Ref. 3 also follows from his formalism if the Hamiltonian is differentiated under the assumption of equal spin-wave amplitudes on the sites A and equal amplitudes on the sites B as well as of equal spin quantum numbers for all sites. The assumption of equal spin-wave amplitudes in the equations of motion lead, according to Kaplan, to a quadratic dispersion law. The author demonstrates that

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Dispersion formula in ferrites with...

after the proper corrections, the assumption of equal amplitudes, either in the Hamiltonian or in the equations of motion in the ferrimagnetic case, lead to the quadratic dispersion law, in the antiferromagnetic case to a linear dispersion law. Instead of equation (K.3) from Kaplan's paper the author writes ...

$$S_i^{Az} \cong S^A + \frac{S^A - (S_i^{Ax})^2 - (S_i^{Ay})^2}{2S^A} \quad (1).$$

$$S_j^{Bz} \cong -S^B - \frac{S^B - (S_j^{Bx})^2 - (S_j^{By})^2}{2S^B}.$$

Assuming equal amplitudes in the Hamiltonian, the transformations which lead to the reciprocal lattice then have the form

$$S^{Ay}[\vec{r}_a^A(n)] = \sqrt{\frac{S^A}{2N}} \sum_{\vec{K}} e^{i\vec{K}\cdot\vec{r}_a^A(n)} P^A(\vec{K})$$

$$S^{Ax}[\vec{r}_a^A(n)] = \sqrt{\frac{S^A}{2N}} \sum_{\vec{K}} e^{-i\vec{K}\cdot\vec{r}_a^A(n)} Q^A(\vec{K})$$

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$$S^{By}[\vec{r}_\beta^{\,B}(n)] = -\sqrt{\frac{S^B}{4N}} \sum_{\vec{K}} e^{-i\vec{K}\cdot\vec{r}_\beta^{\,B}(n)} P^B(\vec{K})$$

$$S^{Bx}[\vec{r}_\beta^{\,B}(n)] = \sqrt{\frac{S^B}{4N}} \sum_{\vec{K}} e^{i\vec{K}\cdot\vec{r}_\beta^{\,B}(n)} Q^B(\vec{K}). \qquad (2)$$

and instead of Eq. (K.24)

$$\hat{H} = \sum_{\vec{K}}' \left\{ \frac{A}{2} [(P^{A+})^2 + (P^{A-})^2 + (Q^{A+})^2 + (Q^{A-})^2] + \right.$$

$$+ \frac{B}{2} [(P^{B+})^2 + (P^{B-})^2 + (Q^{B+})^2 + (Q^{B-})^2] +$$

$$\left. + \frac{\gamma}{2\sqrt{2}} [P^{A-}P^{B-} - P^{A+}P^{B+} - Q^{A-}Q^{B-} + Q^{A+}Q^{B+}] \sum_{\alpha\beta} \zeta_{\alpha\beta}^{A}(\vec{K}) \right\},$$

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$$A = JZ_A S^B, \quad B = JZ_B S^A, \quad \gamma = J\sqrt{S^A S^B}.$$

Dispersion formula in ferrites with...

is obtained. The equations of motion have the form

$$\dot{Q}^{A+} = AP^{A+} - \chi P^{B+}; \quad \dot{P}^{A+} = -AQ^{A+} - \chi Q^{B+},$$
$$\dot{Q}^{A-} = AP^{A-} + \chi P^{B-}, \quad \dot{P}^{A-} = -AQ^{A-} + \chi Q^{B-},$$
$$\dot{Q}^{B+} = BP^{B+} - \chi P^{A+}, \quad \dot{P}^{B+} = -BQ^{B+} - \chi Q^{A+},$$
$$\dot{Q}^{B-} = BP^{B-} + \chi P^{A-}, \quad \dot{P}^{B-} = -BQ^{B-} + \chi Q^{A-},$$

$$\chi = \frac{\gamma}{\sqrt{2}} \sum_{\rho} \zeta_{i\rho} \qquad (4).$$

The normal modes are obtained from

$$\begin{vmatrix} A^2 - \chi^2 - \omega^2, & \pm\chi(A-B) \\ \mp\chi(A-B), & B^2 - \chi^2 - \omega^2 \end{vmatrix} = \begin{vmatrix} A-\omega, & \pm\chi \\ \mp\chi, & -B-\omega \end{vmatrix} \cdot \begin{vmatrix} A+\omega, & \pm\chi \\ \mp\chi, & -B+\omega \end{vmatrix} = 0 \qquad (A).$$

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The exact solutions are

$$\omega_1 = \tfrac{1}{2}[A - B + \sqrt{(A+B)^2 - 4\chi^2}]$$
$$\omega_2 = \tfrac{1}{2}[B - A + \sqrt{(A+B)^2 - 4\chi^2}] \qquad (5).$$

Assuming equal spin-wave amplitudes on the sites A and equal amplitudes on the sites B in Eq.(K.37),

$$\dot{Q}^{A+} = AP^{A+} - \sqrt{2}\chi P^{B+}, \quad \dot{P}^{A+} = -AQ^{A+} - \sqrt{2}\chi Q^{B+},$$
$$\dot{Q}^{A-} = AP^{A-} + \sqrt{2}\chi P^{B-}, \quad \dot{P}^{A-} = -AQ^{A-} + \sqrt{2}\chi Q^{B-},$$
$$\dot{Q}^{B+} = BP^{B+} - \frac{1}{\sqrt{2}}\chi P^{A+}, \quad \dot{P}^{B+} = -BQ^{B+} - \frac{1}{\sqrt{2}}\chi Q^{A+},$$
$$\dot{Q}^{B-} = BP^{B-} + \frac{1}{\sqrt{2}}\chi P^{A-}, \quad \dot{P}^{B-} = -BQ^{B-} + \frac{1}{\sqrt{2}}\chi Q^{A-}, \qquad (6)$$

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holds. For long spin-waves

$$\omega_1 = 6J\sigma + \frac{33}{48} JS^A S^B \sigma^{-1} (aK)^2$$

$$\omega_2 = \frac{33}{48} JS^A S^B \sigma^{-1} (aK)^2, \qquad (7)$$

holds where $\sigma = 2S^B - S^A$. For $S^A = S^B$,

$$\omega_1 = 6JS + \frac{33}{48} JS(aK)^2$$

$$\omega_2 = \frac{33}{48} JS(aK)^2 \qquad (8)$$

holds, for $S^A = 2S^B$ (antiferromagnetic case) $\omega_1 = \omega_2 = \frac{1}{2}\sqrt{33}\, JS^B \cdot aK$ (9).

Substituting Eq. (K.3) from Kaplan's paper for (1) a linear dispersion law is obtained for $S^A = 2S^B + 1$. Assuming equal amplitudes in Kaplan's Hamiltonian Eq. (K.24) one should obtain a Hamiltonian similar to the Hamiltonian (3). However, instead of A/2 there would be A, instead of B/2, 2B and instead of $\gamma/2\sqrt{2}$, γ. If, in (5), 2A, 4B, $2\sqrt{2}\gamma$ are substituted for A, B, γ respectively and if only low values of K are considered, a

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Dispersion formula in ferrites with...

linear dispersion law is obtained: $\omega_1 = \omega_2 = \sqrt{33}$ JS·aK. Thus, it appears that the error of T. A. Kaplan is due to the incorrect assumption of equal spin-wave amplitudes on the sites A and on the sites B in the formula (K.24). The author thanks Professor S. Szczeniowski for helpful discussions. There are 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Department of Theoretical Physics, Adam Mickiewicz University, Poznan

SUBMITTED: March 11, 1961

Card 7/7

33782

P/045/62/021/002/002/007
B137/B102

24,7000 (1139, 1143, 1144)

AUTHOR: Kowalewski, Leon

TITLE: Spin-wave theory of $MeFe_2O_4$ ferrite. Part I.

PERIODICAL: Acta Physica Polonica, v. 21, no. 2, 1962, 121 - 129

TEXT: Basing in part on the theory of Tyablikov, S. V. (Fiz. Metal. i Metallovedeniye, 2, 193 (1956); ibid., 3, 3 (1956); ibid., 8, 152 (1959)), the author presents the spin-wave theory of a ferrite with normal spinel structure. If N denotes the total number of magnetic ions, then N/3 ions are in the so-called tetrahedral (A) position and 2N/3 in the octahedral (B) position. The spinel lattice consists of six translational sublattices. The amplitudes of the spin waves are assumed to be different at lattice points belonging to different translational sublattices. The sublattices A and B are taken to be ferromagnetic sublattices with antiparallel directions of magnetization. The calculations are carried out in a spin representation directed along the external magnetic field and inclined at an arbitrary angle to the crystallographic axes. The Hamiltonian of the system is formulated, and the spin operators are replaced by Bose's operators. The total Hamiltonian is obtained by introducing the simpli-

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Spin-wave theory of $MeFe_2O_4$ ferrite....

fying condition of magnetic quasi-saturation and calculating the minimum energy. The position vectors of "magnetic" lattice points are then calculated, and the Hamiltonian is rewritten. The dispersion relations are calculated for the case of strongest interaction between nearest A-B neighbours and for equal spins at all points. The quantum spin number is found to be twice larger, and the superexchange integral four times smaller, than the respective quantities obtained by Kaplan. The dispersion relations are quadratic for small values of the wave vector. At last, the Hamiltonian and the dispersion relations are derived on the assumption that the amplitudes of the spin waves are equal at all tetrahedral and octahedral sites, but different at either type of site. Professor S. Szczeniowski is thanked for discussions. There are 1 figure and 10 references: 9 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: Kaplan, T. A., Phys. Rev., 109, 782 (1958).

ASSOCIATION: Department of Theoretical Physics, Adam Mickiewicz University, Poznań

SUBMITTED: July 4, 1961

Card 2/2

P/512/62/000/005/006/006
E032/E414

AUTHOR: Kowalewski, Leon

TITLE: Characteristic and free energies of spin waves in single-domain ferromagnetic single crystals

SOURCE: Poznan. Uniwersytet. Zeszyty naukowe. no.39. Matematyka, fizyka, chemia. no.5. 1962. 171-203

TEXT: This theoretical paper is concerned with low temperatures and arbitrary magnetic fields. The Holstein-Primakoff method (Phys. Rev., 58, 1940, 1098) is generalized to the case of an arbitrary angle between the magnetic field and the spontaneous magnetization vector. Ferromagnon-phonon interactions are neglected. It is shown that in the case of only spin excitation, the method of N.N.Bogoliubov and S.W.Tiablikov (Zurn. Eksper. Ticor Fiz., 19, 1949, 251 and 255) is equivalent to the spin representation. The generalized Holstein-Primakoff method is then used to calculate the spin wave energy, the free energy and the ground state energy of single-domain ferromagnetic single crystals. Exchange, pseudo-dipole and pseudo-quadrupole interactions are taken into account. The calculations are carried out for seven types of cubic and hexagonal lattices.

Card 1/2

P/512/62/000/005/006/006
Characteristic and free ... E032/E414

ASSOCIATION: Katedra fizyki teoretycznej
(Department of Theoretical Physics)

SUBMITTED: October, 1960

Card 2/2

KOWALEWSKI, Leon

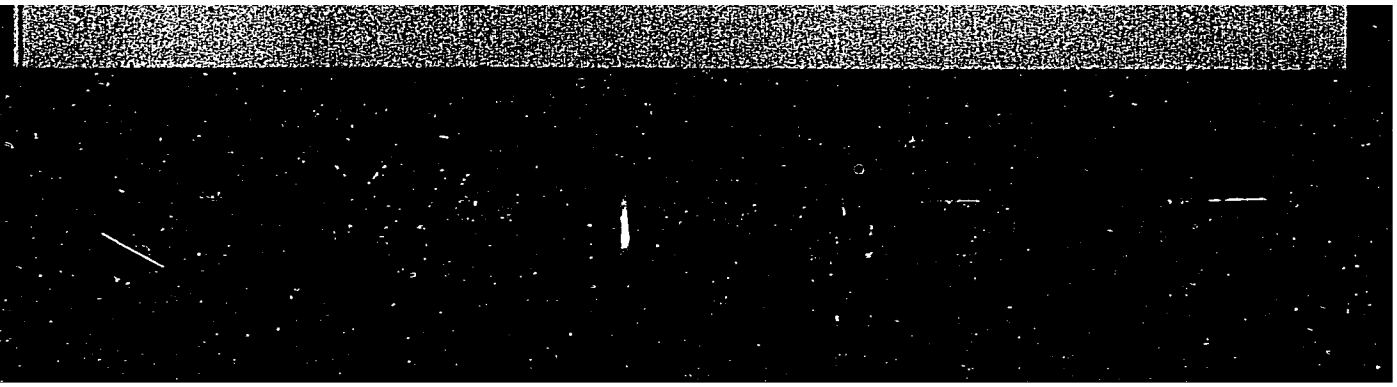
Spin-wave theory of magnetoplumbite ferrites. Acta physica Pol 24 no.5: 583-589 N'63.

1. Department of Theoretical Physics, Adam Mickiewicz University, Poznan.

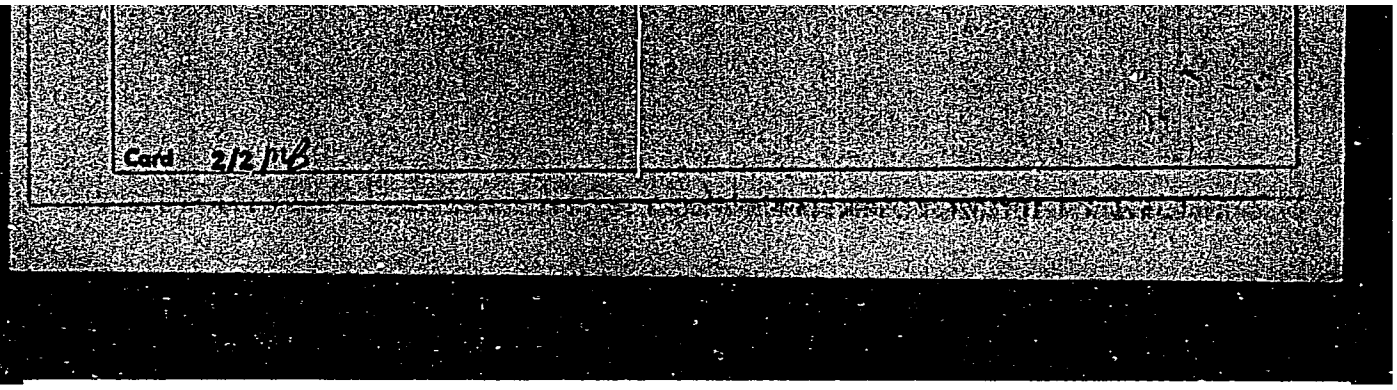
KOWALEWSKI, Leon

On diagonalization of the free spin-wave Hamiltonian for arbitrary magnetic structure. Acta Physica Pol 24 no.3: 415-418 S'63.

1. Department of Theoretical Physics, Adam Mickiewicz University, Poznan.



APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000825710



KOWALEWSKI, M., mgr inz.; ZIELINSKI, S., mgr inz.;

Sintering weathered mixtures. Hutnik P 30 no.7/8:220-223 Jl/Ag'63.

1. Instytut Metalurgii Zelaza, Gliwice.

KOWALEWSKI, M.

In connection with the publication of the Central Statistical Administration; the difficult year 1963; capital investments and technological progress; technology and export; a worrying indicator. Przegl techn 85 no.10:4 8 Mr'64.

KOWALEWSKI, M.

Turning point of the Blachownia Coke Chemical Works. Przegl techn 84 no. 31: 3 4 Ag '63.

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AUTHOR: Maslanka, A., and Kowalewski, M

TITLE: Metallurgical News - Desulfurization of Pig Iron Outside the Blast Furnace with Solid Desulfurizing Agents

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ABSTRACT: The following solids are used in the desulfurization of pig iron: CaO, $CaCO_3$, CaC_2, $CaCN_2$. These substances have the advantage that they react with liquid iron and the product of the reaction also appears in solid state. If well powdered and mixed with the pig iron, these substances also react more rapidly than liquid slag. They also have the following advantages: unlike liquid slag, they do not corrode the heat-resistant of furnaces and they can easily be separated from the pig iron. Again, their reactions do not produce noxious fumes as is the case during desulfurization with alkaline compounds. The author then discusses in turn and in detail the four methods of

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desulfurizing pig iron. In the experiments (for purposes of comparison) the pig iron used contained the same amount of sulfur in each case and also the same amount of desulfurizing agent was used in each case. It was found that the desulfurizing potential of the four compounds depended more on the amount of sulfur present in the pig iron than on the amount of desulfurizing agent used. (See table 10). From the data obtained it is seen that where only small amounts of sulfur are present (0.03%), the best desulfurizing agent is $CaCO_3$ (despite the fact that carbon dioxide, an oxidizing agent, is given off during this reaction) followed by CaO, CaC_2 and $CaCN_2$. But with a larger amount of sulfur in the pig iron (0.06%) these roles are reversed, the best desulfurizer being $CaCO_3$, followed by CaC_2, Ca CN_2 and CaO. One of the problems

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studied during this process was the effect of the amount and type of desulfurizing agent used on loss of temperature of the pig iron during desulfurization. Table 11 gives the results of these tests and shows that $CaCO_3$ followed by $CaCN_2$ cause the greatest losses of temperature. The author stresses that in considering methods of desulfurization with solids and their possible application in the Polish industry, one must keep in mind also such factors as the cost of installing the necessary equipment and the economic feasibility of the project. Desulfurization by the Kalling process (Swedish) i.e. with CaO, makes it possible to obtain metals with minimum sulfur content. However, the revolving vats needed in this process and the auxiliary equipment involved would preclude its adoption in Poland, firstly because of the costs involved and secondly because the Polish overcrowded plants

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just do not have enough floor space to accomodate all the apparatus needed. However, this process may profitably be used where small quantities of pig or cast iron are to be desulfurized. Special attention must be paid to the method where the desulfurizing agent is introduced into a bath in a stream of gas. The authors discuss two such methods. In the first, the desulfurizing agent is introduced through a jet dipped into the bath from above, in the second it is introduced from below, but this process is much more costly requiring the use of special convertor-type ladles. The first of these methods is now being extensively tested at the Institute of Iron Metallurgy in Gliwice with regard to its possible future application in the Polish industry. In the method thought fittest for adoption, the desulfurizing agent, CaC_2 ,

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